Clinical Identification and Treatment of Trichomoniasis in Local Health Department Clinics

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Disclosures

• I have received grant funding from Cepheid, Melinta, NIH and CDC

• This presentation will include discussion of the following non-FDA-approved or investigational uses of products/devices:

• Testing for *T. vaginalis* utilizing:
  • Hologic Gen-Probe APTIMA Combo 2® (in men)
  • Roche COBAS® Amplicor PCR
Vaginitis

• Most common reason for patient visit to OB/GYN. 10 million patient visits per year in the United States.

• Three primary infections in order of prevalence:
  – Bacterial vaginosis
  – Candidiasis
  – Trichomoniasis
Vaginitis

• Usually characterized by:
  – Vaginal discharge
  – Vulvar itching
  – Irritation
  – Odor
Other Causes of Vaginitis

- Mucopurulent cervicitis
- Herpes simplex virus
- Atrophic vaginitis
- Allergic reactions
- Desquamative Inflammatory Vaginitis (DIV)
- Vulvar vestibulitis
- Foreign bodies
Diagnosis of Vaginitis

• Patient history
• Visual inspection of internal/external genitalia
• Appearance of discharge
• Collection of specimen
• pH (avoid cervico-vaginal pool!)
• Preparation and examination of specimen slide
TRICHO MANIA

OTHERWISE KNOWN AS 'THAT GORGEOUS COCONUT SHAMPOO'.

47 1/2 lb
11 75 1/4 lb
TV Incidence and Prevalence

- Sexually transmitted parasite
- 248 million new cases world-wide in 2005 (WHO 2011)
- Estimated prevalence in US:
  - 3.1% in the general female population (2001-4)
    - Prevalence increases with age
    - Highest rates in AA (13.3%; 95%CI 10-17.7%)
    - Symptoms not predictive
  - 8.7% women from 21 states undergoing testing for GC/CT (N=7593)
  - 2.5-23.2% of adolescents
  - 8.6-38% of drug users

Prevalence Rates by Pathogen and Age


[Bar chart showing prevalence rates by pathogen and age categories: TV, CT, GC]
**Trichomonas vaginalis and HIV**

- Most common curable STD in HIV+ women
  - 6-44% prevalence
  - 18-36% repeat infection rate (8% in HIV-neg)
- Multiple studies support the epidemiological association between TV and HIV
- HIV-infected women with TV had higher prevalence of HIV RNA in vaginal secretions than those without TV and TV treatment reduced vaginal HIV shedding over a 1-3 month period

TV/HIV Interactions: Potential Mechanisms

• Mechanical disruption of epithelial barrier
• Inflammation (cellular immune response)
• Impaired immune response
  – TV decreases SLPI (secretory leukoprotease inhibitor) and other innate immune factors
• Impact on vaginal flora
  – Increased susceptibility to BV
  – Persistence of abnormal vaginal flora
TV and HIV Shedding

- 14 original studies examined, 8 found an increased risk.
- Meta-analysis and review papers were mixed
  - Small sample sizes in many studies
  - Confounding

Kissinger STI 2013

Figure 2. Trichomonas and HIV genital shedding. *The findings of Hobbs and Price are not shown in the figure because they did not present effect measures.
Recommendations for TV Screening in the General Population

• Women presenting with genital complaints

• Women presenting for STD evaluation

• Women at “high risk”

• HIV-infected women
Diagnosis
MOST TRICHOMONAL INFECTIONS ARE ASYMPTOMATIC!!!
Wet Prep: Trichomoniasis

Saline: 40X objective

*Trichomonas shown for size reference only: must be motile for identification

Source: Seattle STD/HIV Prevention Training Center at the University of Washington
Trichomonas – Pap Smear
<table>
<thead>
<tr>
<th>Diagnostic test</th>
<th>Technique</th>
<th>Time to result</th>
<th>Specimen</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet Mount</td>
<td>Vag swab with saline microscopy</td>
<td>Minutes, in office</td>
<td>Vag swab</td>
<td>35-82%</td>
<td>99.6-100%</td>
</tr>
<tr>
<td>Culture</td>
<td>Media: Diamond’s, Trichosel, InPouch TV</td>
<td>24-120h; send out</td>
<td>Vag swab, urethral swab, urine, semen</td>
<td>F:75-87% M: 28.6-48%</td>
<td>100%</td>
</tr>
<tr>
<td>APTIMA Trichomonas (GenProbe)</td>
<td>NAAT – TMA to detect species specific 16S rRNA</td>
<td>Hours; send out</td>
<td>Vag swab (F) Urine (F) ThinPrep (F) Urethral swab (M) Urine (M)</td>
<td>96.6-98.4% 87.5% 96-100% 95.2% 73.8%</td>
<td>96-100% 100% 98.8-99.9% 96.5% 98.4%</td>
</tr>
<tr>
<td>Affirm VPIII (BD Diagnostics)</td>
<td>Direct specimen nucleic acid probe assay</td>
<td>45 min; send out or equipped office</td>
<td>Vag swab</td>
<td>83-90.5%</td>
<td>99.8-100%</td>
</tr>
<tr>
<td>OSOM Trichomonas rapid test (Genzyme Diagnostics)</td>
<td>Immunochromatographic capillary flow assay with murine monoclonal antibody</td>
<td>10 min; in office</td>
<td>Vag swab</td>
<td>82-94.7%</td>
<td>98.8-100%</td>
</tr>
</tbody>
</table>

Adapted from Miller and Nyirjesy, Curr Infect Dis Rep 2011 13:595-603; Schwebke JCM Dec 2011; p4106-4111
Treatment Issues
2010 CDC STD Treatment Guidelines: Trichomoniasis

**New Episode**
- Tinidazole 2 g PO single dose OR
- Metronidazole 2 g PO single dose

-Metronidazole 500 mg po BID for 7 days (alternative, rec if HIV+)

**Treatment Failure of 2 g metronidazole single dose** *
- Metronidazole 500 mg BID x 7d

**Treatment Failure – Additional Options** *
- Tinidazole or Metronidazole 2 g PO daily x 5d
2014 CDC STD Treatment Guidelines: Trichomoniasis (proposed)

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**Treatment Failure – Additional Options***
- Tinidazole or Metronidazole 2 g PO daily x 5d-7d
- Tinidazole 2-3g PO daily x 14d plus intravaginal tinidazole
A Randomized Treatment Trial: Single Versus 7-Day Dose of Metronidazole for The Treatment of Trichomonas Vaginalis Among HIV-Infected Women


Evidence A; RCT
Repeat/Persistent Infection

- High rates of repeat infection following 2g metronidazole in all women
  - Increased concern secondary to treatment failure (vs reinfection)
- Range repeat/persistent infection from 18.3-36.9% in HIV positive women
- Role of BV, Antiretroviral therapy

What about resistant *T. vaginalis*?

6 US Cities, STD Surveillance Network, 2009-2010

4.3% with low-level resistance (MIC 50-100μg/mL) to metronidazole; no mod-
high level resistance to metronidazole or tinidazole resistance!

Treatment Conundrums

5-nitroimidazole resistance

- New evidence that susceptibility testing leading to tailored treatment may have beneficial role for management of women with persistent TV*

5-nitroimidazole allergy

- Alternative regimens (poor efficacy)
- Desensitization

CDC (telephone: 404-718-4141; website: http://www.cdc.gov/std)

*Bosserman EA et al. Sex Trans Dis 2011; 38(10):983-987
Alternative Treatments

- Various regimens of high-dose 5-nitroimidazoles
  - Tinidazole 1g PO TID + 500mg PV TID x 14d
- Paromomycin (alone or with tinidazole → paromomycin 5% cream – 5g PV qd + Tinidazole 1g PO TID x 14d
- Clotrimazole
- Acetarsol Pessary
- Povidine-Iodine
- Nonoxynol-9
- Zinc-sulfate
- Furazolidone
- Trichofuran
- Boric acid
- Vaginal/bladder irrigation
- AVC Tablets (1.05g sulfanilamide, allantoin, aminacrine HCL)
TV in pregnancy

• Associated with preterm delivery and low birth weight
• Studies to date yield conflicting results regarding benefit

Bottom line...

• Treat if symptomatic (or if found) – metronidazole 2gm po x 1
• Do not aggressively screen (accept if HIV+)
Partner Management

• TV concordance between partners 22-71.7%

• Sex partners should be treated (partners within the last 60 days or last partner if longer)

• Patient-delivered partner therapy has not definitively been found to decrease recurrent TV in women though adherence with PDPT high

Repeat testing in 3 months for patients treated for TV...

Consistent with recommendations for GC/CT retesting
Resources

www.stdptc.org

www.nnptc.org